

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Previously Presented) A motor drive apparatus comprising:

an inverter driving a motor;

a voltage converter including a switching element and a reactor and having said switching element switched to convert a DC voltage between a power supply and said inverter ; and

a control circuit controlling said voltage converter to stop said switching element from switching when said reactor 's current traverses a zero point.

2. (Currently Amended) A motor drive apparatus comprising:

a drive device driving a motor;

a voltage converter including a switching element and a reactor and having said switching element (~~Q1, Q2~~) switched to convert a voltage between a power supply and said drive device ; and

a control circuit controlling said voltage converter to stop said switching element from switching when said reactor 's current traverses a zero point while said current varies.

3. (Previously Presented) The motor drive apparatus of claim 1 , wherein said control circuit makes a decision from a power supply current input to and output from said power supply and maximum and minimum values of said reactor's current as to whether to stop said switching element from switching and is driven by said decision to control said

voltage converter to stop said switching element from switching to perform an up or down converting operation.

4. (Previously Presented) The motor drive apparatus of claim 3, further comprising:

a first current sensor detecting said power supply current; and

a second current sensor detecting said reactor's current, wherein from said reactor's current detected by said second current sensor said control circuit detects maximum and minimum values of said reactor's current and makes a decision from said maximum and minimum values detected and a power supply current detected by said first current sensor as to whether to stop said switching element from switching.

5. (Previously Presented) The motor drive apparatus of claim 3, wherein when said maximum and minimum values are different in polarity and said power supply current flows from said power supply to said voltage converter said control circuit controls said voltage converter to stop said up converting operation.

6. (Previously Presented) The motor drive apparatus of claim 3, wherein when said maximum and minimum values are different in polarity and said power supply current flows from said voltage converter to said power supply said control circuit controls said voltage converter to stop said down converting operation.

7. (Previously Presented) The motor drive apparatus of claim 1, wherein said control circuit makes a decision from a current input to and output from said voltage

converter as to whether to stop said switching element from switching and is driven by said decision to control said voltage converter to stop said switching element from switching.

8. (Previously Presented) The motor drive apparatus of claim 1 , wherein when said reactor's current does not traverse said zero point said control circuit further controls said voltage converter to have said switching element switched to perform an up or down converting operation.

9. (Previously Presented) The motor drive apparatus of claim 1 , wherein said control circuit makes a decision from a mode of operation of said motor and maximum and minimum values of said reactor's current as to whether to stop said switching element from switching and is driven by said decision to control said voltage converter to stop said switching element from switching to perform an up or down converting operation.

10. (Previously Presented) The motor drive apparatus of claim 1 , wherein said control circuit makes a decision from a mode of operation of said motor and a power supply current required for said motor to output required power as to whether to stop said switching element from switching and is driven by said decision to control said voltage converter to stop said switching element from switching to perform an up or down converting operation.

11. (Previously Presented) The motor drive apparatus of claim 1 , wherein said control circuit makes a decision from a power supply current required for said motor to output required power as to whether to stop said switching element from switching and when said power supply current required is zero said control circuit controls said voltage converter to stop said switching element from switching.

12. (Previously Presented) The motor drive apparatus of claim 1 , wherein said control circuit makes a decision from a mode of operation of said motor and a torque required for said motor) as to whether to stop said switching element from switching and is driven by said decision to control said voltage converter to stop said switching element from switching to perform an up or down converting operation.

13. (Previously Presented) The motor drive apparatus of claim 1 , wherein said control circuit makes a decision from an acceleration pedal position of a vehicle having the motor drive apparatus mounted therein, a mode of operation of said motor , and a torque required for said motor as to whether to stop said switching element from switching and is driven by said decision to control said voltage converter to stop said switching element from switching to perform an up or down converting operation.

14. (Previously Presented) A motor drive apparatus comprising:

- a drive device driving a motor;
- a power generation device generating power;
- a power generation drive device driving said power generation device;
- a voltage converter including a switching element and a reactor and having said switching element switched to convert DC voltage between a power supply , and said drive device , said power generation device and said power generation drive device ; and
- a control circuit controlling said voltage converter to stop said switching element from switching while an amount of power supplied via said voltage converter from said drive device , said power generation device and said power generation drive device toward said

power supply to charge said power supply is smaller than a power loss value in said voltage converter .

15. (Previously Presented) The motor drive apparatus of claim 14, wherein said amount of power charging said power supply is determined by a load command of said drive device , power consumed by said power generation drive device, and power generated by said power generation device .

16. (Previously Presented) A motor drive apparatus comprising:
a drive device driving a motor;
a power generation device generating power;
a power generation drive device driving said power generation device ;
a voltage converter including a switching element and a reactor and having said switching element switched to convert DC voltage between a power supply , and said drive device , said power generation device and said power generation drive device ; and
a control circuit controlling said voltage converter to stop said switching element from switching while an amount of a current supplied via said voltage converter from said drive device , said power generation device and said power generation drive device toward said power supply to charge said power supply is smaller than a current loss value in said voltage converter .

17. (Previously Presented) The motor drive apparatus of claim 16, further comprising a current sensor detecting said amount of current charging said power supply .

18. (Previously Presented) A vehicle comprising:

a wheel ;
a motor driving said wheel ; and
the motor drive apparatus of claim 1 driving said motor .

19. (Previously Presented) A computer readable storage medium having a program stored therein for causing a computer to control voltage conversion between a power supply and a drive device driving a motor , said program causing the computer to execute:
a first step of making a decision as to whether a current flowing through a reactor included in a voltage converter effecting said voltage conversion traverses a zero point; and
when said current traverses said zero point, a second step of controlling said voltage converter to stop a switching element included in said voltage converter from switching while said current varies while traversing said zero point.

20. (Previously Presented) A computer readable storage medium having a program recorded therein for causing a computer to control voltage conversion in a motor drive apparatus , wherein:

said motor drive apparatus includes
a drive device driving a motor,
a power generation device generating power,
a power generation drive device driving said power generation device , and
a voltage converter converting voltage between a power supply , and said drive device , said power generation device and said power generation drive device ; and
said program causes a computer to execute
a first step of making a decision as to whether an amount of power supplied from said drive device , said power generation device and said power generation drive device

toward said power supply to charge said power supply is smaller than a power loss value in said voltage converter , and

for said amount of power smaller than said power loss value, a second step of controlling said voltage converter to stop a switching element included in said voltage converter from switching while said amount of power is smaller than said power loss value.

21. (Previously Presented) A computer readable storage medium having a program recorded therein for causing a computer to control voltage conversion in a motor drive apparatus , wherein:

said motor drive apparatus includes

a drive device driving a motor,

a power generation device generating power,

a power generation drive device driving said power generation device , and

a voltage converter converting voltage between a power supply , and said drive device , said power generation device and said power generation drive device ; and

said program causes a computer to execute

a first step of making a decision as to whether an amount of a current supplied from said drive device , said power generation device and said power generation drive device toward said power supply to charge said power supply is smaller than a current loss value in said voltage converter , and

for said amount of the current smaller than said current loss value, a second step of controlling said voltage converter to stop a switching element included in said voltage converter from switching while said amount of the current is smaller than said current loss value.